Attorney Docket No. 1225.014 **PATENT**
Confirmation No. 8430

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Richard L. Smith
Serial No.: 10/656,462
Filed: September 5, 2003
For: Mobile Decontamination Unit

Group Art Unit: 1723
Examiner: Tony G. Soohoo

January 25, 2008

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL BRIEF UNDER 37 CFR § 41.37

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences," filed by facsimile on September 25, 2007.

1. **Real Party in Interest.**

The real party in interest in this appeal is Global Ground Support, LLC, the assignee of the above-referenced patent application.

2. **Related Appeals and Interferences.**

There are no related appeals and/or interferences involving this application or its subject matter.

3. **Status of Claims.**

The present appeal involves Claims 1-7, 11-21, 25-33 and 35, which are currently under rejection as set forth in the Office Action mailed June 25, 2007. Claims 8, 9, 10, 22-24, and 34 have been cancelled.

Applicant notes that despite the Examiner's repeated rejection of language in Claim 12 (as recited on page 2 of the Office action), Applicant amended Claim 12 to satisfy the Examiner's concerns in the response filed June 12, 2007.

Applicant further notes that despite the Examiner's inclusion of Claim 10 as pending in the latest Office Action, Applicant cancelled Claim 10 in its response filed June 12, 2007.

The claims at issue, namely, Claims 1-7, 11-21, 25-33 and 35, are set forth in the attached Claims Appendix.

4. **Status of Amendments.**

An Office Action was mailed June 25, 2007, rejecting pending Claims 1-7, 11-21, 25-33 and 35 under 35 U.S.C. §103(a). Applicants did not submit any claim amendments after this Office Action of June 25, 2007.

5. **Summary of Claimed Subject Matter.**

Foam-based decontaminants are environmentally friendly, may be immediately dispersed in public areas with minimal concern for harmful effects, and increase contact time with a hazardous agent. An apparatus for mixing liquid decontaminants and dispensing foam-based or liquid-based contaminants addresses current military and civilian requirements for minimizing casualties in the event of a chemical attack. Paragraphs 3 and 5 of present application.

Prior to the present invention, small man-portable units lacked the capacity for carrying sufficient amounts of decontaminant for dispersal over wide areas. Further, the commercially available man-portable units are incapable of dispensing the preferred binary or multi-component decontaminant fluids. Moreover, known compressed air foam (CAF) systems are ill-suited for mixing and delivering the preferred binary or multi-component decontaminant foams. Specifically, known CAF systems are limited to decontaminant foam created by introducing compressed air into the fluid stream in conjunction with an aerated nozzle to create the desired foaming action. Paragraphs 7 and 10 of present application.

The present invention relates, in part, to an apparatus that is capable of mixing preferred binary or multi-component decontaminant fluids and dispensing foam decontaminants. In particular, the present invention provides a pump assembly that safely and effectively mixes the liquid binary or multi-component agents to form foam or liquid decontaminants.

Figure 1 is a schematic view of a first embodiment of the apparatus for mixing and dispensing a foam-based or liquid-based decontaminant. Figure 2 is a flow diagram of a first embodiment of the apparatus. Figure 3 is a schematic view of the first embodiment of the pump assembly. Figure 4 is a flow diagram of a second embodiment of the apparatus. Figure 5 is a schematic view of a second embodiment of the pump assembly. Figure 6 is a perspective view of a first embodiment of the mobile decontamination module as incorporated into a vehicle. Figure 7 is a perspective view of a second embodiment of the

mobile decontamination module secured to a mobile platform. Figure 8 is a perspective view of the second embodiment of the mobile decontamination module as incorporated into a heavy transport vehicle.

Figures 1-8 are reproduced below:

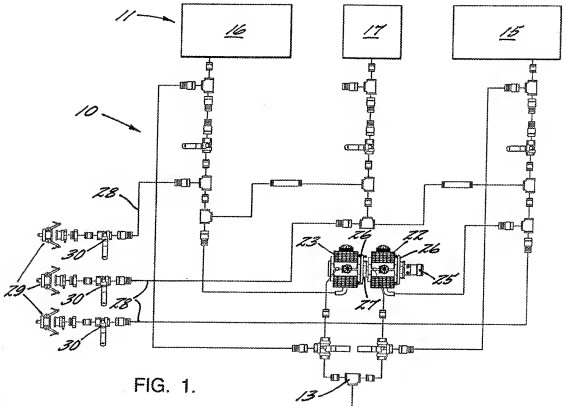

FIG. 1.

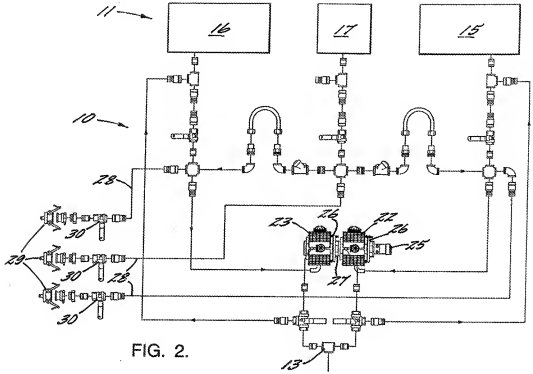

FIG. 2.

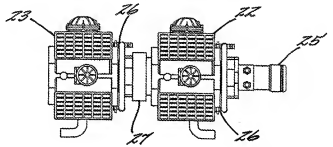

FIG. 3.

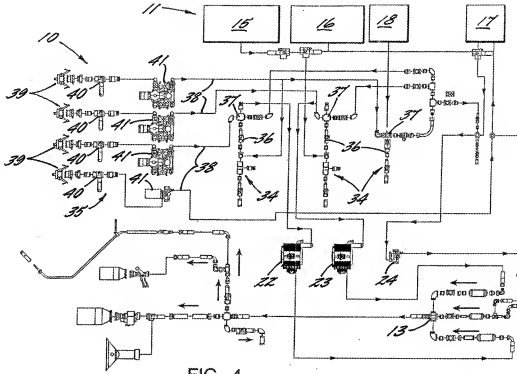

FIG. 4.

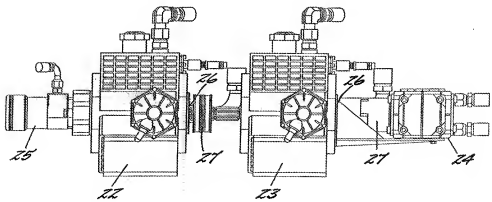

FIG. 5.

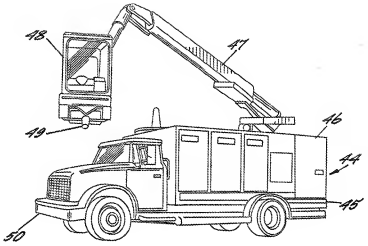

FIG. 6.

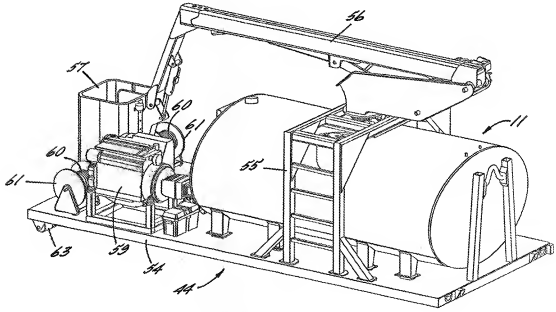

FIG. 7.

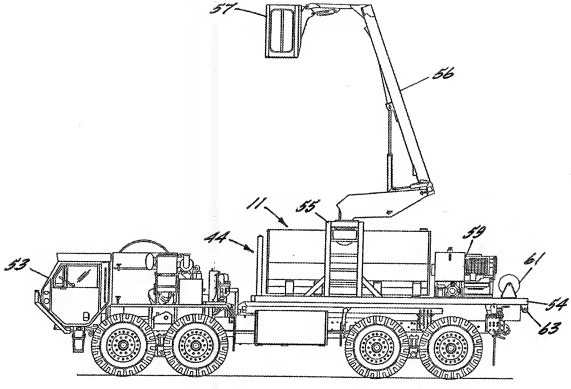

FIG. 8.

As illustrated in Figure 1, the apparatus of the invention can include a plurality of tanks 15, 16, 17 containing liquids, and a pump assembly having pumps 22, 23 with drive assemblies 26. Paragraphs [0051] and [0053]. A coupling 27 connects the drive assemblies 26, and a motor 25 drives the drive assemblies. Paragraphs [0055] and [0056]. The invention can further include a manifold 13 in communication with the pumps and tanks, wherein the manifold mixes liquids from the tanks. Paragraph [0060]. The couplings 27 and drive assemblies 26 are arranged in an alternating sequence such that one coupling connects in series to the drive assemblies. *See* Figures 1, 2, 3, and 5. The motor 25 is directly connected in linear series to one end of one pump 22, and further connected in linear series to the drive assembly 26 of the one pump 22 such that the motor engages the drive assembly of the one pump 22, initially drives one of the couplings 27 connected to the drive assembly of the one pump, and further drives the drive assemblies of another pump 23 and coupling 27. Paragraph [0058]. *See* Claim 1.

In one embodiment depicted in Figures 3 and 6-8, the invention is a mobile decontamination module where the pump assembly includes a first pump 22, a second pump 23, a first coupling 27, drive assemblies 26, and a motor 25. Paragraphs [0069]. In this embodiment, the first and second pumps 22, 23 and respective drive assemblies 26 are aligned in a linear, nonparallel arrangement. Further, the first coupling 27 is positioned immediately between the first and second pumps. The first coupling connects the drive assembly of the first pump 22 directly to the drive assembly of the second pump 23. Further, the motor 25 is connected in linear series with, and solely to, the drive assembly 26 of the first pump 22, such that the motor engages the drive assembly of the first pump, and drives the first coupling and drive assembly of the second pump 23. As configured, the drive assemblies and the first coupling are arranged in a linear series. Paragraph [0058]. *See* Claim 15.

In one exemplary embodiment of the invention, such as recited in Claims 2, 3, 16, and 17, and as illustrated in Figures 1, 2, and 6-8, the apparatus can include a unitary drain and fill assembly having conduits 28, couplings 29, and valves 30. Paragraph [0065].

In another exemplary embodiment, such as recited in Claim 35 and illustrated in Figure 1, the apparatus of Claim 1 includes, in part, a third tank 17 and a unitary drain and fill assembly 28, 29, 30 in communication with the tanks 15, 16 and pump assembly. Paragraphs [0053] and [0065]. The pumps are capable of drawing liquids from all three tanks in defined ratios to the manifold for mixing and dispensing, and each of the drive assemblies and couplings rotate coaxially with respect to one another. Paragraphs [0059].

6. **Grounds of Rejection to Be Reviewed on Appeal.**

Claims 1, 11, 12, 15, 25, and 35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,250,218 to Sinclair in view of U.S. Patent No. 5,482,441 to Permar.

Claims 2-7, 16-21, and 28 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sinclair in view of Permar, and further in view of U.S. Patent No. 5,980,836 to Moffett.

Claims 13, 14, 26, 27, and 29-33 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sinclair, in view of Permar, and further in view of U.S. Patent Nos. 3,957,203 to Bullard and 3,074,649 to Atkinson.

7. **Argument.**

A. ***Claims 1, 11, 12, 15, 25, and 35 are Patentable under 35 U.S.C. 103(a) over U.S. Patent No. 3,250,218 to Sinclair in View of U.S. Patent No. 5,482,441 to Permar***

The Examiner has taken the position that Claims 1, 11, 12, 15, 25, and 35 are obvious in view of U.S. Patent No. 3,250,218 to Sinclair in view of U.S. Patent No. 5,482,441 to Permar. Applicants submit that Claims 1, 11, 12, 15, 25, and 35 are patentable over Sinclair in view of Permar.

The invention is directed, in part, to an apparatus for mixing liquid decontaminants and dispensing a foam-based or liquid-based decontaminant that is useful in decontaminating wide areas (e.g., airfields, seaports, and terrain) and individual equipment (e.g., aircraft and buildings) after, for example, a chemical attack. As recited in Claim 1 and depicted in Figure 1, the apparatus includes, in part:

a plurality of tanks;

a pump assembly that operates to drain and fill the tanks, the pump assembly having

a plurality of pumps each in communication with a respective tank, and each pump has a respective drive assembly, the pumps and drive assemblies aligned in a linear, non-parallel arrangement;

a plurality of couplings connecting each of the pump's drive assemblies to one another in linear series, the couplings and drive assemblies coaxially aligned with respect to one another, and arranged in an alternating sequence such that one of the couplings connects in series two drive assemblies;

a motor directly connected in linear series to one end of one pump, the motor further connected in linear series to the drive assembly of the one pump such that the motor engages the drive assembly of the one pump, initially drives one of the couplings connected to the drive assembly of the one pump, and further drives the drive assemblies of the other pumps and other couplings; and

a manifold in communication with the plurality of pumps and tanks, the manifold for mixing liquids from the tanks.

More specifically, the pumps are capable of drawing liquids from the tanks in defined ratios through the pumps to the manifold for mixing and dispensing. Further, each of the drive assemblies and each of the couplings rotate coaxially with respect to one another.

As recited in Claim 15, the apparatus described above is incorporated into a mobile decontamination module suitable for field use and includes, in part:

a plurality of tanks capable of containing liquids;

a pump assembly having

a first pump in communication with the tanks and having a drive assembly,

a second pump in communication with the tanks and having a drive assembly, the first and second pumps and respective drive assemblies aligned in a linear, non-parallel arrangement;

a first coupling positioned immediately between the first and second pumps, the first coupling coaxially aligned with the drive assemblies of the first and second pumps, and connecting the drive assembly of the first pump directly to the drive assembly of the second pump;

a motor connected in linear series with and solely to the drive assembly of the first pump, such that the motor engages the drive assembly of the first pump and drives the first coupling and the drive assembly of the second pump; and

a manifold in communication with the first and second pumps and the tanks, the manifold capable of mixing liquids from the plurality of tanks.

In this embodiment, the first and second pumps are capable of drawing liquids from the plurality of tanks in defined ratios through the first and second pumps to the manifold for mixing and dispensing. Further, the drive assemblies and the first coupling are arranged in

linear series such that each of the drive assemblies and the first coupling rotate coaxially with respect to one another.

As recited in Claim 35, the apparatus of Claim 1 includes, in part, a third tank and a unitary drain and fill assembly in communication with the tanks and pump assembly. The pumps are capable of drawing liquids from all three tanks in defined ratios to the manifold for mixing and dispensing, and each of the drive assemblies and couplings rotate coaxially with respect to one another.

Sinclair is directed to a pumping apparatus for blending a plurality of liquids together and maintaining a substantially constant ratio—even over wide variations in the rate of flow. More specifically, Sinclair is a pumping assembly used in the oil industry to pump oils of different character from various containers into a single output pipe to dispense a blended oil of the desired composition. *See* column 1, lines 10-21. Referring to Figure 1, Sinclair discloses two inlet pipes 1a, 1b, two pumps 2a, 2b, pipes 4a, 4b, an outlet pipe 3, and a mixing chamber 8. The pumps 2a, 2b are driven by a motor 9 acting through an overall controlling variable speed gearbox 10, a fixed speed gearbox 11, and two individual gearboxes 12 (of variable speed) and 13 (of fixed speed) that are connected respectively to the pumps 2a, 2b. A flow meter 16 that is connected to the outlet pipe 3 controls the setting of the ratio in the gearbox 10 through a connection 17. Stated differently, the flow meter 16 is connected to a motor 33 through an electric switch 31. The motor changes the gear ratio of gearbox 10 in response to the flow meter 16. Specifically, switch 31 alters the motor 33 to control the setting of the gear ratio in gearbox 10 in response to the flow meter. *See* column 3, lines 35-42.

As set forth above, Sinclair teaches a blending system having two pumps 2a, 2b that operate cooperatively in response to the viscosity meter 14 and flow meter 16. *See* Sinclair, Figure 1. Specifically, viscosity meter 14 controls the setting of the gear ratio in variable

gear box 12 through connection 15. Further, gear box 12 operates pump 2a. Flow meter 16 controls the setting of the gear ratio in the overall controlling variable gear box 10 through connection 17. Variable gear box 10 operates fixed gear box 11 and in turn fixed gear box 13. Fixed gear box 13 operates pump 2b. In Sinclair's preferred system, the ratio of the volume output in unit time of the various pumps may be kept constant, and the overall volume output in unit time of the entire system may be varied by means of an overall controlling variable speed gear box 10. *See* Column 2, lines 65-70 (emphasis added).

By incorporating an overall controlling variable speed gearbox 10 with multiple fixed and variable gear boxes connected to two pumps in parallel, Sinclair addresses the problem of maintaining a desired ratio of liquids over wide variations in flow rate. Thus, Sinclair teaches away from a motor having a single shaft connected to pumps (as disclosed in Permar) in order to maintain a constant ratio over a wide variation of flow rate.

In addressing variable rates of flow, Sinclair teaches that "one has to counteract the effect of back pressure in the system when flow in the outlet pipe is being reduced." *See* column 2, lines 43-46. Sinclair recites that to address the back pressure issue, produced when flow in the outlet pipe is reduced, it is preferable to adjust the speed of the pumps in accordance with the flow in the outlet pipe. *See* column 2, lines 54-58 (emphasis added). Sinclair specifically teaches that it is preferred that all pumps be driven through individual gearboxes (of which at least one is a variable speed gearbox responsive to a monitoring device). *See* column 2, lines 58-61. According to Sinclair, the individual gearboxes are in turn driven by one motor through an overall controlling variable speed gearbox. *See* column 2, lines 61-63. The overall controlling variable speed gearbox can be adjusted in response to variations in the flow in the outlet pipe.

Permar is directed to a liquid flow control system used to desalinate sea water. Permar discloses an electric motor 10 having an output shaft 12 which extends from both ends of the motor housing, a variable displacement liquid pump 14 connected to one end of the output shaft, a variable displacement liquid metering pump 16 connected to the other end

of the output shaft 12, and a filter to separate the liquid into a permeate portion and a concentrate portion. A conduit 30 connects the pipe outlet of liquid pump 14 to a reverse osmosis filter 32.

In the Office Action mailed June 25, 2007, the Examiner admits that Sinclair fails to disclose the plurality of couplings and pump assemblies connected in alternating sequence in a linear series, and a motor that is directly connected in linear series to one end of the pump, wherein the motor is in linear series to the drive assemblies. *See* Office Action, page 3. These acknowledged differences are significant, and Applicant respectfully submits that Sinclair actually teaches away from the modification proposed by the Examiner. Specifically, the Examiner argues that Permar discloses a motor, and two variable displacement pumps 14, 16 that are respectively connected to two different sources 28, 28a (i.e., filters), wherein the pumps are connected to one another in a linear coaxial manner with intermediate coupling shaft 12 that is driven in a same coaxial direction. To argue that it would merely be "a rearrangement of parts" to modify (1) the drive assembly, (2) the motor, and (3) couplings between the drives and motor of Sinclair to include a coaxial arrangement (acknowledged by the Examiner to be absent from Sinclair) ignores the basic premise of the overall controlling variable speed gearbox of Sinclair—i.e., one variable speed gear box that drives multiple individual gear boxes that in turn drive all pumps.

As noted above, the purpose of the Sinclair assembly is to counteract the effect of back pressure in the outlet pipe when the system operates at variable flow rates (i.e., reduced flow rate in the outlet pipe). *See* column 2, lines 43-46. Sinclair addresses this issue by advocating the use of multiple individual gear boxes—at least one variable and responsive to a monitoring device—that are driven by a motor through an overall controlling variable speed gear box. By doing so, Sinclair advocates adjusting the speed of the pumps in accordance with the flow in the outlet pipe via a single gear box 10.

Sinclair contends that its overall controlling variable speed gear box 10 and individual gear boxes 11, 12, and 13 will achieve the stated purpose of blending liquids and maintaining a ratio over a wide variation of flow rate. *See* column 1, lines 11-15.

The Examiner cites *In re Japiske*, 37 C.C.P.A. 1026 (1950) for the proposition that "rearranging parts of an invention involves only routine skill in the art" (Office Action, page 4). Applicant submits that *Japiske* more accurately held that "there would be no invention in shifting the starting switch ... to a different position since the operation of the device would not thereby be modified." *Japiske*, 37 C.C.P.A. at 1031. In the present case, rearranging the drive assemblies and couplings of the subject apparatus is quite distinct from moving a switch. The switch of the hydraulic press in *Japiske* merely starts the press. In the present case, "rearranging" the drive assemblies and couplings from a parallel to a linear arrangement flies in the face of Sinclair's teachings. Sinclair provides no motivation to rearrange the system and eliminate fixed speed gearbox 11, variable gear box 12, fixed gear box 13, and overall controlling gearbox 10. The purpose of the overall controlling variable gearbox 10 is to provide a system whereby the controlling gearbox responds to flow rate fluctuations at the outlet pipe and adjusts all connected gear boxes, wherein the connected gear boxes are necessarily arranged in parallel fashion because Sinclair requires fixed gear box 11 to actuate the overall adjustment.

The single fixed gear box 11 is required to accommodate the shafts of pumps 2a, 2b because gear box 12 is responsive to the viscosity meter 14 via motor 32 and overall controlling gear box 10 is responsive to the flow meter 16 via motor 33. Stated differently, variable gear boxes 10, 12 operating multiple pumps 2a, 2b require a fixed intermediate gear box 11 because the ultimate goal of Sinclair is to counter the overall affect of reduced flow rate at the outlet 3 by adjusting motor 33 which is connected to the overall controlling gear box 10 via connection 17.

Specifically, overall controlling gearbox 10 is connected to fixed gearbox 11 which in turn is connected to a nonlinear arrangement of drive assemblies and pumps (gearboxes 12,

13, and pumps 2a, 2b). In sum, Sinclair advocates the use of one overall controlling variable gear box connected to parallel pumps and drive assemblies.

Applicant submits the "mere fact that a worker in the art could arrange the parts of a referenced device to meet the terms of claims on appeal is not by itself sufficient to support a finding of obviousness." *Ex Parte Chicago Rawhide Mfg. Co.*, 223 U.S.P.Q. 351, 353 (Bd. Pat. App. & Inter. 1984). The purported rearranging of the drive assembly of Sinclair defeats the purpose of Sinclair.

Following the teachings of Sinclair, then, one skilled in the art would adopt a single overall controlling gear box 10 to drive parallel pump and drive assemblies having separate gearboxes, whereby the motor 33 of the overall controlling gear box communicates with the flow meter 16 at the outlet pipe 3 to counteract back pressure. By doing so, the ratio of the volume outputs of the various pumps may be kept constant, and the overall volume output may be varied by the overall controlling gear box. The skilled artisan thus would necessarily understand that Sinclair requires an overall controlling gearbox connected to multiple separate gearboxes that are associated with each pump and drive assembly, whereby the pumps and drive assemblies are necessarily arranged in parallel fashion to accommodate the single controlling gearbox 10. To modify the parallel arrangement to include drive assemblies and couplings in a coaxial and alternating arrangement would frustrate the purpose of the overall controlling gearbox.

Accordingly, the person of ordinary skill in the art would not reasonably draw the inference from Sinclair of (1) pumps and drive assemblies in a linear arrangement, (2) couplings connecting each of the drive assemblies in linear series, where the couplings and drive assemblies coaxially aligned in alternating series, and (3) a motor connected in linear series to the drive assembly of a single pump. Indeed, when properly read for all that it teaches, Sinclair teaches away from the claimed invention, and the skilled artisan would reach the opposite conclusion, that is, that Sinclair requires a non-linear arrangement of drive assemblies and pumps, wherein the drive assemblies, pumps, and couplings are in a parallel

arrangement to permit a single overall controlling gear box to vary overall volume output of the whole system in response to variations in the flow at the outlet pipe.

Applicant further submits that Permar cannot overcome the deficiencies of Sinclair because Permar's arrangement of pumps connected in-line by opposing ends of a shaft driven by a motor would defeat the purpose of Sinclair's single overall controlling gear box to vary the individual gearboxes of each pump, and thereby vary the overall volume output of the system in response to the flow meter at the outlet.

Thus, modifying Sinclair's device in view of Permar as suggested by the Examiner is not simply an issue of substituting one known element for another. Rather, such a modification would require a complete redesign of the Sinclair device to include components not found in the cited prior art, and that operate in a significantly different manner.

Further, there is no motivation to combine Sinclair and Permar as suggested by the Examiner. Sinclair and Permar address two fundamentally different problems using structurally distinguishable devices. Sinclair concerns the blending of oils at a desired ration and maintaining a substantially constant ratio during fluctuating flow rates at an outlet by incorporating an overall controlling variable gearbox that in turn controls pumps and drive shafts connected to at least one fixed gearbox, wherein the pumps and drive shafts are assembled in parallel arrangement. Permar concerns the separating of seawater via a filter into a permeate portion and a concentrate portion by avoiding an overall controlling gearbox and incorporating one or more in-line drive shafts to operate one or more pumps.

Even assuming for the sake of argument that Permar's linear arrangement of pumps and drive assemblies could be substituted without more for Sinclair's parallel arrangement, that substitution would retain the overall controlling gear box, and still does not disclose or suggest the Applicant's invention as claimed for the reasons discussed above.

The Supreme Court recently addressed the standard for determining obviousness in *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727 (2007). The Court stated that the *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 86 S.Ct. 648 (1966) factors still control an

obviousness inquiry. Those factors are: the scope and content of the prior art; the differences between the prior art and the claims at issue; and the level of ordinary skill in the pertinent art. *Id.*, 127 S.Ct. at 1734 (quoting *Graham*, 383 U.S. at 17-18).

The *KSR* Court recognized that prior art teaching away from combining certain elements is an indicator of the nonobviousness of a claimed invention. *KSR*, 127 S. Ct. at 1740 (citing *United States v. Adams*, 383 U.S. 39, 86 S.Ct. 708 (1966)). *See also In re Sullivan*, 2007 U.S. App. LEXIS 20600 (Fed. Cir. 2007) (Evidence rebutting a prima face case of obviousness of a claimed invention can include evidence that prior art teaches away from the claimed invention in any material respect).

The claimed invention differs significantly from the Sinclair device, and the Examiner admits that Sinclair does not teach numerous elements of the claimed invention. Further, Sinclair does not teach or suggest modifying the device in the manner suggested by the Examiner. Indeed, modifying the Sinclair device in the manner proposed by the Examiner would actually frustrate the intended purpose of the Sinclair device. Thus, Sinclair actually teaches away from the claimed invention. The Supreme Court confirmed in its *KSR* decision that, as in the current application, prior art teaching away from combining certain elements is an indicator of the nonobviousness of a claimed invention.

In view of the foregoing, Applicants submit that the claimed invention is patentable over Sinclair in view of Permar and accordingly respectfully request that the Board reverse the obviousness rejection of Claims 1, 11, 12, 15, 25, and 35, and order immediate allowance of the same.

7. **Argument (continued).**

B. ***Claims 2-7, 16-21, and 28 are Patentable under 35 U.S.C. 103(a) over U.S. Patent No. 3,250,218 to Sinclair in view of U.S. Patent No. 5,482,441 to Permar and further in view of U.S. Patent No. 5,980,836 to Moffett et al.***

The Examiner has taken the position that Claims 2-7, 16-21, and 28 are obvious in view of Sinclair, in view of Permar, and further in view of U.S. Patent No. 5,980,836 to Moffett. Applicant submits, however, that Claims 2-7, 16-21, and 28 are patentable over the combination proposed by the Examiner.

As recited in Claims 2 and 16, and illustrated in Figure 1, the present invention may include a unitary drain and fill assembly 28, 29, 30 in communication with the plurality of tanks 15, 16, 17 and pump assembly 22, 23, 25, 26 wherein the pump assembly operates to drain and fill the tanks. As recited in Claims 3 and 17, the drain and fill assembly may include a plurality of conduits 28 in communication with the tanks, a plurality of couplings 29 in communication with the conduits, and a plurality of valves 30 in communication with the conduits, wherein the drain and fill assembly drains and fills the tanks at each respective coupling. As recited in claims 4 and 18, and depicted in Figure 4, the invention may include a separate drain assembly 34 and a separate fill assembly 35.

The Examiner admits that Sinclair does not teach or even suggest the claimed (1) couplings and pump assemblies that are connected in alternating sequence in a linear series and (2) motor directly connected in linear series to one end of the pump, wherein the motor is also in linear series to the drive assemblies. For the reasons set forth above, the incorporation of Permar's pump and drive assembly would render Sinclair's overall controlling gearbox inoperable.

Applicants submit that Sinclair in view of Permar does not render Claim 1 (and thus Claims 2-7 and 11-14 which are dependent thereon), Claim 15 (and thus Claims 16-21 and 25-33 which are dependent thereon) or Claim 35 obvious for the reasons discussed in more

detail above. Applicant further submits that Moffett cannot overcome the basic deficiencies of Sinclair and Permar.

Moffett discloses an apparatus for preparing low concentration polysilicate microgels that includes a number of reservoirs 10, 12, 14; a number of pump assemblies 68, 36, 44, 24, 102, 84; a number of manifolds 20, 52, 76, 78 (see Figure 1), 20, 20A, 78, 78A, 76, 76A (see Figure 2), 78, 106, 20 (see Figure 3), and a number of drains "DRAIN". As disclosed in Moffett, the drains are separate and apart from any conduit capable of filling the tanks. None of the pumps, drains, conduits, or couplings disclosed by Moffett are capable of operating in conjunction with one another to both drain and fill the invention at a single location.

In contrast, the present invention includes a unitary drain and fill assembly comprised of conduits 28, couplings 29, and valves 30 as shown in Figure 1. The pumps, conduits, couplings and valves of the claimed apparatus and mobile decontamination module can both drain and fill the inventions. Moffet makes no such disclosure, nor does it suggest such operation. Claims 2, 3, 16, and 17 recite a unitary drain and fill assembly—comprising conduits, couplings and valves—in communication with the tanks and pump assembly, wherein the pump assembly operates to drain and fill the tanks.

The Examiner alleges that Moffet discloses a drain assembly of the type claimed. Office Action, page 6. Applicant submits that the pumps, drains, and valves disclosed by Moffett are incapable of operating to drain and fill the tanks. Accordingly, Moffett fails to disclose a plurality of tanks, pump assemblies, manifold, and drain that function as a unitary drain and fill assembly. Accordingly, Moffett does not teach or suggest an apparatus having a unitary drain and fill assembly in communication with a plurality of tanks and a pump assembly, whereby the pump assembly operates to drain and fill the plurality of tanks. Thus, Moffett must be removed as a §103(a) reference.

As discussed above, the Supreme Court recently addressed the standard for determining obviousness in *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727 (2007). The *KSR* Court rejected a rigid application of the teaching, suggestion, or motivation ("TSM") test in

an obviousness inquiry. Still, the Court acknowledged the importance of identifying "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does" in an obviousness determination. *KSR*, 127 S.Ct. at 1731. Moreover, the Court indicated that there is "no necessary inconsistency between the idea underlying the TSM test and the *Graham* analysis." *Id.* As long as the test is not applied as a "rigid and mandatory" formula, that test can provide "helpful insight" to an obviousness inquiry. *Id.*

Also as discussed above, the *KSR* Court recognized that prior art teaching away from combining certain elements is an indicator of the nonobviousness of a claimed invention. *KSR*, 127 S. Ct. at 1740 (citing *United States v. Adams*, 383 U.S. 39, 86 S.Ct. 708 (1966)). *See also In re Sullivan*, 2007 U.S. App. LEXIS 20600 (Fed. Cir. 2007) (Evidence rebutting a prima face case of obviousness of a claimed invention can include evidence that prior art teaches away from the claimed invention in any material respect).

In view of the foregoing, Applicants submit that the claimed invention is patentable over Sinclair in view of Permar, and further in view of Moffettt, and respectfully request that the Board reverse the obviousness rejection of Claims 2-7, 16-21, and 28, and order immediate allowance of the same.

7. ***Argument (continued).***

C. ***Claims 13, 14, 26, 27, and 29-33 are Patentable under 35 U.S.C. 103(a) over Sinclair in view of Permar, and further in view of U.S. Patent No. 3,957,203 to Bullard and U.S. Patent No. 3,074,649 to Atkinson.***

The Examiner has further taken the position that Claims 13, 14, 26, 27, and 29-33 are obvious in view of Sinclair, in view of Permar, and further in view of U.S. Patent No. 3,957 to Bullard and U.S. Patent No. 3,074,649 to Atkinson. Applicants respectfully submit, however, that Claims 13, 14, 26, 27, and 29-33 are also patentable over the combination proposed by the Examiner.

Claim 13 is also directed to the apparatus of Claim 1 as mounted on a vehicle. Further, Claim 14 is directed to the apparatus of Claim 1 mounted on a mobile platform. Still further, Claim 26 recites the mobile decontamination module of Claim 15 further comprising, among other elements:

a platform supporting the tanks, pump assembly, and manifold;

an enclosure secured to the platform;

a retractable boom mounted to the enclosure, wherin the boom is in communication with the tanks, pump assembly, and manifold;

an enclosed cab secured to the boom;

and a dispensing nozzle connected to the boom, wherein the dispensing nozzle is in communication with the tanks, pump assembly, and manifold.

Furthermore, the platform supporting the enclosure is secured to a vehicle.

Applicants submit that Sinclair does not render Claim 1 (Claims 13 and 14 which are dependent thereon) obvious for the reasons discussed in more detail above with respect to other claims under consideration in this appeal. Applicant further submits that Permar cannot overcome the deficiencies of Sinclair, also for the reasons discussed in more detail above. Applicant also offers the following.

With respect to Claims 13, 14, 26, 27, and 29-33, the Examiner argues that Sinclair discloses all of the recited subject matter as defined within the scope of the claims with the exception of the system being mounted on a vehicle or mobile platform with a cab, boom, or basket and a nozzle. According to the Examiner, Bullard allegedly teaches that a mixed fluid material supplied in a tank 134 may be provided upon a mobile platform 12 and sprayed utilizing a boom 76 mounted nozzle 82. Atkinson supposedly teaches that a fluid delivery system from a tank 9, boom 3, and nozzle 1 may be operated from a cab 53. In sum, the Examiner argues that it would have been obvious to one of ordinary skill in the art to provide the mixing device of Sinclair with a mount upon a vehicle or mobile platform with a cab, boom, or basket and nozzle for the mixer tank device of Sinclair so that the mixed fluid may be easily transported and delivered to a particular location. Applicant respectfully disagrees with the Examiner's assessment of the blending device as disclosed by Sinclair, and the alleged mobile platform as disclosed by Bullard.

As noted above, Sinclair fails to disclose the claimed apparatus and mobile decontamination module. Thus, Sinclair is improper and should not be combined with Bullard or Atkinson. Neither Bullard nor Atkinson disclose these features of the present invention, and thus Sinclair, taken either individually or in combination with Bullard and/or Atkinson, still fails to teach or suggest the components of the claimed invention.

In sum, the Examiner argues that it would have been obvious to one of ordinary skill in the art to provide the mixing device of Sinclair with a mount upon a vehicle or mobile platform with a cab, boom, or basket and nozzle for the mixer tank device so that the mixed fluid may be easily transported and delivered to a particular location. Applicant respectfully disagrees with the Examiner's assessment of the pump assembly as disclosed by Sinclair, and the alleged mobile platform as disclosed by Bullard.

The Examiner alleges that Bullard discloses a mobile platform 12. Applicant submits that the platform of Bullard is a truck bed forming an integral part of the vehicle frame. *See* Bullard, column 2, lines 32-33.

In contrast, the present invention includes a wheeled platform 54 secured to, and not integral with, the vehicle frame. *See* Claims 14, 32, and 33. As constructed, Bullard fails to teach the use of a platform secured to a vehicle. *See* Figures 7 and 8 of present application.

Applicant submits there is no motivation to combine Bullard with Sinclair to arrive at the present structure because Bullard teaches the use of a tank and boom assembly integral with (i.e., an essential part of) a vehicle frame. The combination of Sinclair and Bullard results in a vehicle having pumps, tanks, a boom, and a spray nozzle mounted to the boom, wherein each of the above-referenced components are directly integral with the frame of the vehicle. This combination does not result in a wheeled platform supporting the components, wherein the platform is not an integral part of the vehicle frame such that the platform may be removed from one vehicle, transported, and affixed to another vehicle.

Accordingly, Sinclair, taken either individually or in combination with Bullard, does not teach or suggest a mixing assembly (i.e., pump and manifold) secured to a wheeled platform. Given that the combination of Sinclair and Moffett fail to show or suggest these recitations, the addition of Atkinson to the combination of references is also insufficient to deny patentability. For the reasons stated above, Sinclair fails to stand as proper prior art, and taken either individually or in combination with Permar, Bullard and Atkinson, does not teach or suggest an apparatus of Claims 1, 13, and 14 mounted on a vehicle or mobile platform—wherein the platform is a separate and distinct component apart from the vehicle (i.e., not integral with the vehicle) or a mobile decontamination module of Claims 15, 26, 27, and 29-33 having a wheeled platform supporting the tanks, pump assembly, and manifold; an enclosure secured to the platform; a retractable boom mounted to the enclosure, wherein the boom is in communication with the tanks, pump assembly, and manifold; an enclosed cab

secured to the boom; and a dispensing nozzle connected to the boom, wherein the dispensing nozzle is in communication with the tanks, pump assembly, and manifold.

In view of the structural distinctions between the present invention and the cited references, Applicant submits that combining Sinclair—either alone or in combination with—Bullard and Atkinson in a way that renders the present invention obvious relies on impermissible hindsight.

Again, as discussed above, the Supreme Court recently addressed the standard for determining obviousness in *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727 (2007). The *KSR* Court rejected a rigid application of the teaching, suggestion, or motivation ("TSM") test in an obviousness inquiry. Still, the Court acknowledged the importance of identifying "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does" in an obviousness determination. *KSR*, 127 S.Ct. at 1731. Moreover, the Court indicated that there is "no necessary inconsistency between the idea underlying the TSM test and the *Graham* analysis." *Id.* As long as the test is not applied as a "rigid and mandatory" formula, that test can provide "helpful insight" to an obviousness inquiry. *Id.*

Also as discussed above, the *KSR* Court recognized that prior art teaching away from combining certain elements is an indicator of the nonobviousness of a claimed invention. *KSR*, 127 S. Ct. at 1740 (citing *United States v. Adams*, 383 U.S. 39, 86 S.Ct. 708 (1966)). *See also In re Sullivan*, 2007 U.S. App. LEXIS 20600 (Fed. Cir. 2007) (Evidence rebutting a prima face case of obviousness of a claimed invention can include evidence that prior art teaches away from the claimed invention in any material respect).

The cited documents do not teach or suggest numerous elements of the claimed invention, and there is no reason that would have prompted a person of ordinary skill in the art to modify the devices of the prior art as proposed by the Examiner. There is certainly no reason identified to prompt the skilled artisan to modify the devices to include components that are not even a part of the prior art. Indeed, modifying the devices of the cited art as

suggested by the Examiner is not simply an issue of substituting one known element for another. Rather, such a modification would require a complete redesign of the prior devices to include components not found in the cited prior art, and that operate in a significantly different manner.

Further, the art relied upon by the Examiner actually teaches away from the claimed invention. The Supreme Court confirmed in its *KSR* decision that, as in the current application, prior art teaching away from combining certain elements is an indicator of the nonobviousness of a claimed invention.

In view of the foregoing, Applicants submit that the claimed invention is patentable over Sinclair in view of Permar, and further in view of Bullard, and Atkinson, and accordingly respectfully request that the Board reverse the obviousness rejection of Claims 13, 14, 26, 27, and 29-33 and order immediate allowance of the same in this case.

8. ***Claims Appendix.***

A copy of the claims involved on appeal is provided in the Appendix.

9. ***Evidence Appendix.***

There is no evidence, and therefore an Appendix setting forth evidence is not provided.

10. ***Related Proceedings Appendix.***

There are presently no related proceedings, and therefore an Appendix setting forth any related proceedings is not provided.

Respectfully submitted,

//Jesse B. Ashe, III//

Jesse B. Ashe, III
Reg. No. 44,513

21176
Summa, Allan & Additon, P.A.
11610 North Community House Road, Suite 200
Charlotte, NC 29277-2162
Telephone: 704/945-6703
Facsimile: 704/945-6735

CLAIMS APPENDIX

1. (Previously presented) An apparatus for mixing liquid decontaminants and dispensing a foam-based or liquid-based decontaminant, said apparatus comprising:

a plurality of tanks capable of containing liquids;

a pump assembly operating to drain and fill said plurality of tanks, said pump assembly having

a plurality of pumps, wherein each pump is in communication with a respective tank, and each pump has a respective drive assembly, said pumps and said drive assemblies aligned in a linear, non-parallel arrangement;

a plurality of couplings connecting each of said drive assemblies of said plurality of pumps to one another in linear series, said couplings and said drive assemblies coaxially aligned with respect to one another, said couplings and said drive assemblies arranged in an alternating sequence such that one each of said couplings connects in series two each of said drive assemblies;

a motor directly connected in linear series to one end of one of said pumps, said motor further connected in linear series to said drive assembly of said one pump such that said motor engages said drive assembly of said one pump, initially drives one of said couplings connected to said drive assembly of said one pump, and further drives said drive assemblies of other said pumps and other said couplings;

a manifold in communication with said plurality of pumps and said plurality of tanks, said manifold for mixing liquids from said plurality of tanks;

wherein said plurality of pumps are capable of drawing liquids from said plurality of tanks in defined ratios through said pumps to said manifold for mixing and dispensing; and

wherein each of said drive assemblies and each of said couplings rotate coaxially with respect to one another.

2. (Original) An apparatus according to Claim 1, further comprising a unitary drain and fill assembly in communication with said plurality of tanks and said pump assembly; wherein said pump assembly operates to drain and fill said plurality of tanks.

3. (Original) An apparatus according to Claim 2, wherein said drain and fill assembly comprises:

a plurality of conduits in communication with said plurality of tanks;

a plurality of couplings in communication with said plurality of conduits, each of said plurality of couplings capable of receiving a hose; and

a plurality of valves in communication with said plurality of conduits;

wherein said drain and fill assembly drains and fills said plurality of tanks at each of said respective couplings.

4. (Original) An apparatus according to Claim 1, further comprising:

a drain assembly in communication with said plurality of tanks, said drain assembly capable of draining said tanks; and

a fill assembly in communication with said plurality of tanks, said fill assembly capable of filling said plurality of tanks.

5. (Original) An apparatus according to Claim 4, wherein said drain assembly comprises:

a plurality of conduits in communication with said plurality of tanks; and

a plurality of valves in communication with said plurality of conduits;

wherein said pump assembly operates to drain said plurality of tanks by pumping liquids from said tanks.

6. (Original) An apparatus according to Claim 4, wherein said fill assembly comprises:

a plurality of conduits in communication with said plurality of tanks;

a plurality of couplings in communication with said plurality of conduits, each of said plurality of couplings capable of receiving a hose;

a plurality of valves in communication with said plurality of conduits; and

a plurality of pumps in communication with said couplings, said conduits, and said tanks;

wherein said pumps operate to fill said plurality of tanks by pumping liquids from said couplings through said conduits and to said tanks;

wherein said drain assembly and said fill assembly drains and fills said tanks, respectively, at separate positions along said respective conduits.

7. (Previously presented) An apparatus according to Claim 6, wherein said pump assembly and said fill assembly are capable of flushing liquid from one of said tanks through said pump assembly, said fill assembly, said conduits, and said manifold.

8. (Cancelled).

9. (Cancelled).

10. (Cancelled).

11. (Previously presented) An apparatus according to Claim 1, wherein said plurality of pumps are positive displacement diaphragm pumps.

12. (Previously presented) An apparatus according to Claim 1, wherein said manifold dispenses liquid from one of said plurality of tanks independent of other said tanks.

13. (Original) An apparatus according to Claim 1, wherein said apparatus is mounted on a vehicle.

14. (Original) An apparatus according to Claim 1, wherein said apparatus is mounted on a mobile platform.

15. (Previously presented) A mobile decontamination module for mixing liquid decontaminants and dispensing a foam-based or liquid–based decontaminant, said module comprising:

a plurality of tanks capable of containing liquids;

a pump assembly having

a first pump in communication with said plurality of tanks, said first pump having a drive assembly,

a second pump in communication with said plurality of tanks, said second pump having a drive assembly, said first and second pumps and said respective drive assemblies aligned in a linear, non-parallel arrangement;

a first coupling positioned immediately between said first and second pumps, said first coupling coaxially aligned with said drive assemblies of said first and second pumps, said first coupling connecting said drive assembly of said first pump directly to said drive assembly of said second pump;

a motor connected in linear series with and solely to said drive assembly of said first pump, such that said motor engages said drive assembly of said first pump and drives said first coupling and said drive assembly of said second pump; and

a manifold in communication with said first and second pumps and said plurality of tanks, said manifold capable of mixing liquids from said plurality of tanks;

wherein said first and second pumps are capable of drawing liquids from said plurality of tanks in defined ratios through said first and second pumps to said manifold for mixing and dispensing; and

wherein said drive assemblies and said first coupling are arranged in linear series such that each of said drive assemblies and said first coupling rotate coaxially with respect to one another.

16. (Previously presented) A mobile decontamination module according to Claim 15, further comprising a unitary drain and fill assembly in communication with said plurality of tanks and said pump assembly;

wherein said pump assembly operates to drain and fill said plurality of tanks.

17. (Original) A mobile decontamination module according to Claim 16, wherein said drain and fill assembly comprises:

a plurality of conduits in communication with said plurality of tanks;

a plurality of couplings in communication with said plurality of conduits, each of said plurality of couplings capable of receiving a hose; and

a plurality of valves in communication with said plurality of conduits;

wherein said drain and fill assembly drains and fills said plurality of tanks at each of said respective couplings.

18. (Original) A mobile decontamination module according to Claim 15, further comprising:

a drain assembly in communication with said plurality of tanks, said drain assembly capable of draining said tanks; and

a fill assembly in communication with said plurality of tanks, said fill assembly capable of filling said plurality of tanks.

19. (Original) A mobile decontamination module according to Claim 18, wherein said drain assembly comprises:

a plurality of conduits in communication with said plurality of tanks; and

a plurality of valves in communication with said plurality of conduits;

wherein said pump assembly operates to drain said plurality of tanks by pumping liquids from said tanks.

20. (Original) A mobile decontamination module according to Claim 18, wherein said fill assembly comprises:

a plurality of conduits in communication with said plurality of tanks;

a plurality of couplings in communication with said plurality of conduits, each of said plurality of couplings capable of receiving a hose;

a plurality of valves in communication with said plurality of conduits; and

a plurality of pumps in communication with said couplings, said conduits, and said tanks;

wherein said pumps operate to fill said plurality of tanks by pumping liquids from said couplings through said conduits and to said tanks;

wherein said drain assembly and said fill assembly drain and fill said tanks, respectively, at separate positions along said respective conduits.

21. (Previously presented) An apparatus according to Claim 20, wherein said pump assembly and said fill assembly are capable of flushing liquid from one of said tanks through said pump assembly, said fill assembly, said conduits, and said manifold.

22. (Cancelled).

23. (Cancelled).

24. (Cancelled).

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25. (Previously presented) A mobile decontamination module according to Claim 15, further comprising:

a third pump in communication with said plurality of tanks, said third pump having a drive assembly; and

a second coupling connecting said drive assembly of said second pump to said drive assembly of said third pump;

wherein said motor engages said drive assembly of said first pump, such that said motor engages said drive assembly of said first pump and drives said drive assemblies of said first pump, said second pump, and said third pump at the same time.

26. (Original) A mobile decontamination module according to Claim 15, further comprising:

a platform for supporting said plurality of tanks, said pump assembly, and said manifold;

an enclosure secured to said platform, said enclosure arranged to surround at least a portion of said plurality of tanks;

a retractable boom rotatably mounted at one end to said enclosure, said boom in communication with said plurality of tanks, said pump assembly, and said manifold;

an enclosed cab secured to another end of said boom; and

a dispensing nozzle connected to said boom, said dispensing nozzle in communication with said plurality of tanks, said pump assembly, and said manifold;

wherein said platform supporting said enclosure is secured to a vehicle.

27. (Original) A mobile decontamination module according to Claim 26, wherein said dispensing nozzle is controllable from said enclosed cab.

28. (Original) A mobile decontamination module according to Claim 15, further comprising a heating system for heating liquids.

29. (Original) A mobile decontamination module according to Claim 15, further comprising:

a platform for supporting said plurality of tanks, said pump assembly, and said manifold;

a frame secured to said platform, said frame surrounding a portion of said plurality of tanks;

a retractable boom rotatably mounted at one end to said frame, said boom in communication with said plurality of tanks, said pump assembly, and said manifold, said boom being capable of dispensing decontaminants;

a basket secured to another end of said boom; and

a dispensing nozzle connected to said boom, said boom dispensing nozzle in communication with said plurality of tanks, said pump assembly, and said manifold.

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30. (Original) A mobile decontamination module according to Claim 29, further comprising:

a plurality of dispensing hoses in communication with said manifold for dispensing decontaminants onto a desired area; and

a plurality of reel assemblies secured to said platform for collecting said plurality of dispensing hoses;

wherein said manifold is capable of delivering decontaminants to said boom dispensing nozzle and said plurality of dispensing hoses.

31. (Original) A mobile decontamination module according to Claim 29, wherein said boom dispensing nozzle is controllable from said basket and said platform.

32. (Original) A mobile decontamination module according to Claim 29, wherein said platform includes a plurality of rollers for facilitating movement of said platform.

33. (Original) A mobile decontamination module according to Claim 29, wherein said platform is mounted on a heavy equipment vehicle.

34. (Cancelled).

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35. (Previously presented) An apparatus for mixing liquid decontaminants and dispensing a foam-based or liquid-based decontaminant, said apparatus comprising:

a first tank containing a first liquid;

a second tank containing a second liquid;

a third tank containing a third liquid;

a pump assembly having

a plurality of pumps, wherein each pump is in communication with a respective tank, each pump having a respective drive assembly, said pumps and said drive assemblies aligned in a linear, non-parallel arrangement;

a plurality of couplings connecting each of said drive assemblies of said plurality of pumps to one another in linear series, said couplings and said drive assemblies coaxially aligned with respect to one another, said couplings and said drive assemblies arranged in an alternating sequence such that one each of said couplings connects in series two each of said drive assemblies; and

a motor directly connected in linear series to one end of one of said pumps, said motor further connected in linear series to said drive assembly of said one pump such that said motor engages said drive assembly of said one pump, initially drives one of said couplings connected to said drive assembly of said one pump, and further drives said drive assemblies of other said pumps and other said couplings;

a manifold in communication with said plurality of pumps and said plurality of tanks, said manifold for mixing liquids from said plurality of tanks; and

a unitary drain and fill assembly in communication with said plurality of tanks and said pump assembly, said pump assembly operating to drain and fill said plurality of tanks independent of said manifold;

wherein said plurality of pumps are capable of drawing liquids from said plurality of tanks in defined ratios through said pumps to said manifold for mixing and dispensing; and

wherein each of said drive assemblies and each of said couplings rotate coaxially with respect to one another.

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